

APPENDICES

APPENDIX 1: BACKGROUND INFORMATION

What is the history of antidegradation?

Antidegradation predates the creation of EPA in 1972. The basic policy was established on February 8, 1968, by the Secretary of the U.S. Department of the Interior. The federal policy was included in EPA's first water quality standards regulation (see 40 FR 55340). The existing federal requirements pertaining to antidegradation were established as part of the amendments to the water quality standards regulation that were promulgated November 8, 1983 (see 40 CFR 131.12). The Water Quality Act of 1987 recognized antidegradation as an integral component of surface water quality control programs (see CWA § 303(d)(4)(B)).

What are the federal requirements pertaining to antidegradation?

The federal requirements pertaining to antidegradation are included in § 131.12 of the federal water quality standards regulation. In essence, these requirements direct states to adopt an antidegradation policy and identify the procedures that will be followed in implementing the policy. Certain *minimum* requirements are established for such policies and implementation procedures. Section 131.12 of the federal water quality standards regulation reads as follows:

§ 131.12 Antidegradation policy.

- (a) The state shall develop and adopt a statewide antidegradation policy and identify the methods for implementing such policy pursuant to this subpart. The antidegradation policy and implementation methods shall, at a minimum, be consistent with the following:
 - (1) Existing in-stream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.
 - (2) Where the quality of the waters exceed levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the

state finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the state's continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In allowing such degradation or lower water quality, the state shall assure water quality adequate to protect existing uses fully. Further, the state shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control.

(3) Where high quality waters constitute an outstanding National resource, such as waters of national and state parks and wildlife refuges and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected.

(4) In those cases where potential water quality impairment associated with a thermal discharge is involved, the antidegradation policy and implementing methods shall be consistent with section 316 of the Act.

What guidance has EPA developed to support compliance with the antidegradation requirements?

Antidegradation guidance has been issued by EPA at both the national and regional levels. At the national level, guidance on antidegradation is contained primarily in: (1) the preamble to the amendments to the water quality standards regulation that were published November 8, 1983 (see 48 FR 51400), (2) the *Water Quality Standards Handbook* which was issued soon after the 1983 amendments were published, and (3) *Questions & Answers on: Antidegradation*, which was issued in August of 1985. Additional guidance on how antidegradation can be incorporated into the CWA § 401 certification and CWA § 404 permits programs is included in ***Wetlands and 401 Certification. Opportunities and Guidelines for States and Eligible Indian tribes.***

A number of EPA Regional Offices, most notably Regions I, IV, V, and IX, have also issued antidegradation guidance. Because the water quality standards approval authority under CWA § 303(c) has been delegated to the Regional Offices, such Regional guidance is generally developed to supplement the national guidance and pro-

vide additional recommendations regarding particular antidegradation approaches that would be approved by the Regional Administrator. Recently, antidegradation implementation guidance and procedures have also been developed as one component of the Great Lakes Water Quality Initiative. EPA participated in the development of that antidegradation approach, which is to be applied to the Great Lakes and its tributaries.

What is the overall status of state antidegradation implementation efforts?

All fifty-seven states and territories subject to water quality standards program requirements have established antidegradation policies as part of their water quality standards. Many of these antidegradation policies are identical to the federal policy presented above. Others have been customized to the particular needs of the state. EPA allows such customization as long as the state policy is consistent with (or more stringent than) the intent of the federal policy.

Implementation of antidegradation requirements is different, to varying degrees, in every state and territory that is actively implementing antidegradation requirements. Some states incorporate implementation details into the section of their water quality standards that addresses antidegradation. Other states include only an antidegradation policy in their standards and document their implementation procedures in a separate document. Both of these approaches have been approved by EPA.

State implementation also varies in the specific approaches employed to address a number of key antidegradation issues. Because the water quality standards regulation does not identify specific implementation approaches that must be utilized by states, a fairly diverse array of methods have been approved by the EPA Regional Offices. For example, a wide range state approaches have been developed and applied to address protection of high quality waters, also known as antidegradation tier 2. Tier 2 issues that have attracted varying state approaches include the process for identifying waters subject to tier 2 protection and the process for identifying proposed activities that should be subjected to the tier 2 review requirements (i.e., activities that will result in “degradation or lower water quality” as this phrase is used in Section 131.12(a)(2) of the federal policy). Examples of state antidegradation implementation methods on these and other issues are discussed in greater detail in Appendix 2 of this guidance.

APPENDIX 2: STATE APPROACHES TO IMPLEMENTING ANTIDEGRADATION

The objective of this appendix is to present the results of a review of state antidegradation implementation approaches conducted in April of 1992 by EPA Region VIII. The principal objective of the review was to characterize the range of approaches in use on a number of key antidegradation implementation issues.

The implementation procedures for a total of twenty states were reviewed. At the time of the review, these procedures were in various stages of development. The state procedures and their status at the time of this review are shown in Table 1. It was decided to include in the review draft procedures and procedures not yet approved by EPA. The primary basis for this decision was that the objective of the review was simply to compile ideas for addressing each issue. It was also Region VIII's judgment that draft state procedures may be more or less technically valid, and more or less environmentally protective, as final state procedures. Finally, draft state procedures represent a considerable percentage of the existing state antidegradation methodologies.

In characterizing the range of approaches used by the states, an effort was made to use consistent terminology across states for key terms or phrases (e.g., significant change in water quality). The issues which were included in the review span all three tiers of antidegradation. In order to establish how the issues relate to one another and to an overall antidegradation program, each issue has been referenced to Figure 1, which is intended to represent the flow of a typical state antidegradation procedure. Note that Figure 1 is basically a composite flow chart, and that all state antidegradation programs do not conform exactly to the procedure which is illustrated.

Please also note that, because the purpose of the review was simply to characterize the range of approaches in use, the description of a state's approach may be somewhat simplified or paraphrased in the discussion presented below. Refer to the actual procedures for a more detailed description of the state's overall procedure.

TABLE 1

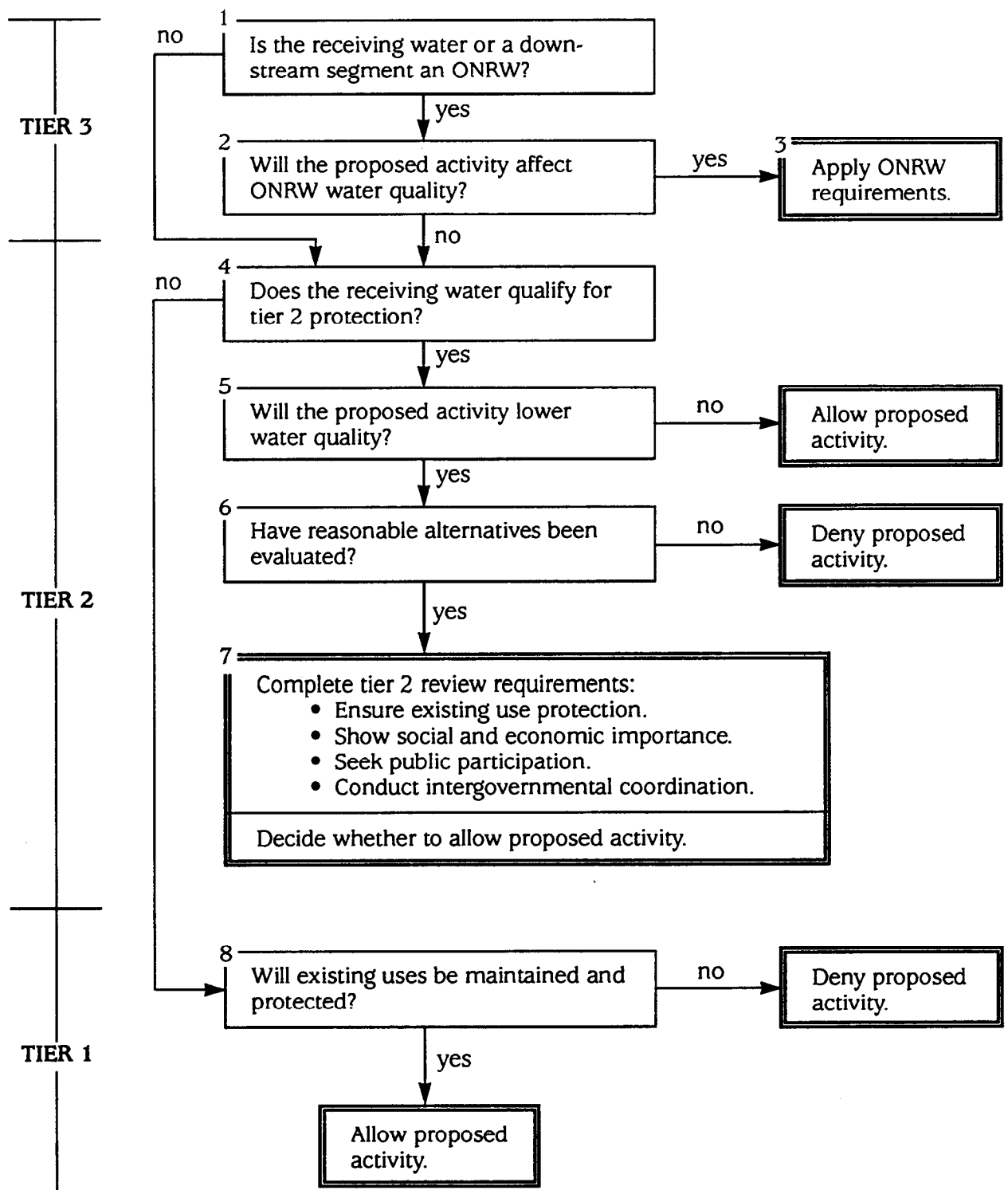
STATE ANTIDEGRADATION IMPLEMENTATION
PROCEDURES REVIEWED

Index No. *	EPA Region	State	Status
1	I	Connecticut	Final
2		Massachusetts	Draft
3		Maine	Draft
4		New Hampshire	Draft
5		Rhode Island	Draft
6		Vermont	Draft
7	II	New Jersey	Final
8		New York	Draft
9	III	Delaware	Draft
10		Pennsylvania	Draft
11		Virginia	Draft
12	IV	Florida	Final
13		North Carolina	Final
14	V	Wisconsin	Final
15	VI	Texas	Final
16	VIII	Colorado	Final
17		Montana	Final
18	IX	Arizona	Final
19		California	Draft
20	X	Idaho	Final

* Where an example from a state procedure is included in the discussion presented in this section (Appendix 2), the source of the example is identified using these index numbers.

FIGURE 2

FLOW OF A TYPICAL STATE ANTIDEGRADATION PROCEDURE



How have the States addressed the key antidegradation implementation issues?

Issue (1): Requirements Applicable to ONRW¹ Segments (see Box 3 in Figure 2).

State requirements applicable to Outstanding National Resource Waters (ONRWs) ensure that the water quality of ONRWs is “maintained and protected.” However, implementation differs from state to state. In some states, ONRW implementation requirements clearly establish that all new or increased sources of pollutants are prohibited with the limited exception of any activities that would result in only minor and temporary changes in ONRW water quality. These states have effectively established outright bans on new or increased discharges which are not temporary in nature (i.e., regardless of the quality of the discharge). Such requirements are consistent with the federal ONRW requirements described in 40 CFR 131.12 and EPA guidance. Other states allow additional exceptions to the “no new or expanded discharge” requirement where the quality of the discharge is sufficient to ensure only minor or no changes in water quality. One approach is to allow exceptions based on a qualitative significance test. For example:

Proposed activities cannot result in significant reduction of water quality below threshold values as determined by the Department. (6)

A similar approach is to determine the acceptability of new sources based on the likelihood of “measurable” change. For example:

If the waterbody is an ONRW, the state cannot allow any measurable degradation of the present water quality. (5)

Another similar approach is to allow new or increased discharges provided that the quality of the discharge is equal to, or better than, background water quality. For example:

Effluent limits for substances in the new or increased portion of the discharge will be set equal to the background levels of these substances upstream of or adjacent to, the discharge site unless it is determined that for tributaries to Great Lakes waters, such limitations would result in significant lowering of water quality. (14)

¹ This discussion uses the term ONRW consistently, but not all states use this term to identify their tier 3 waterbodies.

A quite different approach used by a few states is to allow exceptions to the “no new or expanded discharges” requirement based on a showing that the discharge results in a net benefit to the waterbody. For example:

Proposed activities may be allowed where they help maintain or enhance the resource for its designated use (e.g., water treatment facility effluent; weed or algae control; discharges necessary to provide public access or otherwise maintain the area). (2)

With respect to nonpoint sources, except where nonpoint sources are regulated activities, state implementation procedures generally cite the need to apply best management practices. For example:

Nonpoint sources shall be minimized by application of BMPs as specified in the state Nonpoint Source Pollution Assessment and Management Program. (3)

In summary, states implement requirements to “maintain and protect” the quality of ONRWs using one of two basic approaches: (1) bans on *all* new or increased sources that are not temporary in nature, and (2) bans on new or increased sources that would lower ambient water quality. All state implementation approaches ensure that an extra level of protection is afforded to ONRWs. However, a variety of review criteria is used to determine whether to allow proposed activities located adjacent to, or upstream of, ONRW waters.

Issue (2): Identifying High Quality (Tier 2) Waters (see box 4 in Figure 2).

A variety of approaches is used by the states to identify high quality waters subject to tier 2 protection. The federal water quality standards regulation requires application of tier 2 “where the quality of the waters exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water.” However, the federal regulation does not include specific guidelines for implementing this requirement. EPA guidance also does not advocate one specific implementation approach. Consequently, state procedures do not interpret and implement this requirement in a consistent manner.

Two basic state approaches exist for identifying high quality waters: (1) a parameter-by-parameter approach, and (2) a waterbody-by-waterbody approach. The first approach considers whether water quality exceeds applicable criteria for each individual parameter that would be affected by the proposed activity. Thus, available assimilative capacity for any given parameter is always subject to tier 2 protection regardless of whether the criteria for other parameters are satisfied. States following the second approach use a variety of tech-

niques (qualitative, quantitative, or both) to determine if, based on its overall water quality, a segment should be afforded tier 2 protection. Such determinations may be made prior to the antidegradation review (i.e., the state may assign high quality designations in the state standards), or during the course of the antidegradation review. Under this waterbody-by-waterbody approach, sometimes referred to as the “designational” approach, assimilative capacity for a given parameter may not be subject to tier 2 protection if, overall, the segment is not deemed high quality.

States following a parameter-by-parameter approach generally begin by identifying all parameters in the proposed discharge that are likely to lower water quality. For each of these parameters, the state determines whether existing ambient water quality exceeds applicable water quality criteria (i.e., if assimilative capacity exists). If assimilative capacity exists for any of these parameters, tier 2 requirements would apply to that assimilative capacity and the proposed activity. For example:

Baseline quality should be determined for each parameter in the discharge likely to degrade water quality. Baseline water quality is defined as the best quality of the receiving water that has existed since 1968 (under state resolution 68-16) or since 1975 (under federal regulation) unless subsequent lowering was due to regulatory action consistent with state and federal requirements, in which case the baseline quality is the most recent water quality resulting from the permitted action. If baseline water quality is better than the water quality as defined by the water quality objective, the baseline water quality shall be maintained unless poorer water quality is necessary. . . . (19)

States following the second basic approach (i.e., the waterbody-by-waterbody approach) to identifying high quality waters must judge the overall quality of the segment (i.e., considering all parameters for which numeric criteria have been set or other factors). These states may make these determinations as part of the water quality standards review process and designate a segment as high quality (i.e., a designational approach). Whether or not a designation is made in the state standards, these states employ a variety of qualitative and quantitative tests to determine, overall, if a given segment should be treated as a high quality water.

One tool that can be used in conjunction with a waterbody-by-waterbody approach is to establish an indicator parameter test for identifying high quality waters. These tests differ in the number of parameters included, the percentage of the parameters that must be present at quality better than standards, and the frequency with which

the standards for the parameter must be satisfied. For example, compare the following tests:

Waters shall be designated by the Commission high quality 2 if the existing quality for two or fewer of the following twelve parameters is worse than the aquatic life and recreation numeric standards: dissolved oxygen, Ph, fecal coliform, cadmium, copper iron lead, manganese, mercury, selenium, silver, and zinc. (16)

and:

High quality waters are defined as those waters where existing quality generally exceeds one or more of the following water quality criteria: dissolved oxygen, fecal coliform, color, or turbidity. All waters will be considered as high quality waters unless the applicant can prove otherwise to the satisfaction of the department. (6)

Another waterbody-by-waterbody approach is to base application of tier 2 protection on the classified uses of the segment. For example:

Tier 2 applies to segments classified for fish and aquatic life protection. Tier 2 applies to waters not designated for fish and aquatic life protection where a proposed activity would result in significant degradation in downstream fish and aquatic life waters, exceptional resource waters, or Great Lakes waters. (14)

A third waterbody-by-waterbody approach for identifying high quality waters is to base such judgments on the overall value of the resource. For example:

Waters shall be designated high quality 2 if the waters are located in a National Park, National Monument, National Wildlife Refuge, or a designated Wilderness area; or if the waters are part of a designated wild river under the Federal Wild and Scenic Rivers Act; or if the Commission determines that exceptional reasons are present to warrant the extra protection of uses provided by the high quality 2 designation. (16)

A difficult issue all states must face regardless of whether a parameter-by-parameter or a waterbody-by-waterbody approach is followed concerns defining when assimilative capacity exists. In most cases, ambient monitoring data are limited, and where data are available they usually represent only the summer “critical” period when water quality is at its lowest levels. What about water quality during the rest of the year? Should antidegradation be applied to protect assimilative capacity during the winter months (when flow and water qual-

ity are often different), even if no assimilative capacity exists during the critical summer months? One approach is to reference the definition of assimilative capacity to critical conditions. For example:

The remaining assimilative capacity is the increment of water quality between that required by the minimum standards of the waterbody's classification and a reasonable estimate of existing water quality conditions during 7Q10 streamflow conditions. (3)

Another approach, less frequently employed, is to recognize that assimilative capacity which exists at other times of the year is also worthy of protection. For example, one of the approaches described above would require application of tier 2 where the existing quality for any of four indicator parameters "generally" exceeds applicable criteria. Another example of state implementation language that may allow for protection of cold weather assimilative capacity is the following:

The baseline water quality (for purposes of determining assimilative capacity should be representative of the waterbody, accounting for temporal and spatial variability. (19)

Not all state procedures include a separate definition of assimilative capacity developed for purposes of antidegradation tier 2. These states may rely on procedures developed to support TMDLs and/or derivation of permit limits. For example:

Waters with quality higher than standard will be identified by the Division on a case-by-case basis through the NPDES permitting and wasteload allocation processes. (13)

In summary, identifying high quality waters is not necessarily a straight-forward exercise. As the examples noted above demonstrate, a variety of approaches are currently employed by the states to decide which parameters/waters merit tier 2 protection.

Issue (3): Defining Degradation or Lower Water Quality (see Box 5 in Figure 2).

The single task associated with antidegradation implementation which seems to have generated the widest variety of state approaches is determining whether a proposed activity will degrade water quality to an extent that justifies application of tier 2 protection. Since characterizing the full array of approaches would entail describing practically all of the state approaches reviewed, only a sampling of the more significant state approaches are mentioned below.

The simplest approach is to define degradation as any lowering of water quality. For example:

Degradation is defined as occurring whenever the level of coliform bacteria, dissolved oxygen, toxic and deleterious substances, or radionuclides in surface water where quality is higher than standards would become worse as a result of a proposed activity. Temporary changes in surface water quality resulting from short-term construction or rehabilitation activities are not considered degradation. (17)

A fundamentally different approach is to define significant degradation based on a case-by-case determination which addresses a number of relevant factors. For example:

The Commission will make a determination of whether a proposed discharge or activity will result in a significant change in water quality by utilizing all available data and the best professional judgment of DEP staff. Factors to be considered include, but are not limited to: (a) percent change in a water quality parameter; (b) quality and value of the resource; (c) cumulative impact of discharges and/or activities on water quality; (d) impact on aquatic biota and habitat; (e) eutrophic impacts; (f) impact on existing and potential uses; and (g) percent of remaining assimilative capacity for the water resource. (1)

Quantitative significance tests are also used; these tests range from simple to complex. For example, Arizona considers any increase in baseline conditions of five percent or greater significant degradation; increases less than five percent are not significant degradation. More complicated quantitative significance tests have also been developed. For example, the draft Massachusetts procedures include specific rules for 14 discharge categories and quantitative “thresholds” for 8 pollutant categories (e.g., all new or increased sources of industrial process wastewater and domestic wastewater are considered significant and subject to tier 2 requirements). Other discharge categories are evaluated for significance based on the quantitative pollutant “thresholds” (e.g., BOD impacts on dissolved oxygen concentrations greater than 1 mg/l are considered significant).

Some states use a combination of quantitative and qualitative tests to define significant changes in water quality. Consider the following examples:

Sources of new or increased discharges of pollutants or relocation of a discharge that would consume 10% or more of the remaining assimilative capacity of the receiving water shall be considered significant. A discharge which would consume less than 10% of the remaining assimilative capacity will be subject to a case-by-case review considering the degree of degradation that has been permitted previously, the sensitivity of the particular waterbody, public comments and other relevant factors. (3)

and:

Significance determinations are made taking into account any environmental benefits resulting from the activity and any water quality-enhancing mitigation measures impacting the segment or segments under review. Activities shall be considered insignificant if any one of four tests are satisfied (1) dilution is greater than 100:1 at low flow; (2) the new or increased loading is less than 10 percent of the existing total load to the segment for critical constituents, provided that the cumulative impact of increased loadings from all sources does not exceed 10 percent of the baseline total load; (3) the new or increased loading will consume less than 15 percent of available assimilative capacity for critical constituents; or (4) the activity will result in only temporary or short term changes in water quality. (emphasis added, 16)

State tests of significance often vary depending upon the type of pollutant. For example, the draft New Hampshire procedure would require consideration of the parameter's persistence, synergistic effects, and environmental accumulation. Other states use a more quantitative approach. Consider the following examples:

For persistent toxics, addition of any amount is considered to significantly degrade water quality; for other substances, addition of an amount greater than 5% of one half the remaining assimilative capacity is considered to significantly degrade water quality. (7)

and:

For a new or increased discharge to Great Lakes waters or their tributaries, a proposed activity will be considered significant if the mass loading of any substance with a BAF greater than 250 would be increased (14)

Another approach defines significance based on the error associated with the analytical method. For example:

Significant degradation will be presumed unless the applicant demonstrates that the concentration of the parameter under consideration can be expected to increase (or decrease) by less than the error that is inherent to the technique that is normally used to measure the parameter (these techniques are normally approved by ERA under 40 CFR 136). For example, an expected change in dissolved oxygen of less than 0.2 mg/l would not be considered a significant change, since the DO test is considered accurate to only ± 0.2 mg/l. (10)

Finally, some states limit their evaluation of significance to a subset of the parameters that may be affected by the proposed activity. Pennsylvania, for example, may limit the evaluation to parameters that are identified as significant for the type of discharge and which are significant to protection of waterbody uses. Another example is as follows:

For 10 representative indicator parameters determined by the Department, the applicant shall determine expected levels in the discharge, existing ambient background levels, and expected ambient levels as a result of the proposed new or increased discharge. A proposed activity will be considered significant if it, along with all other new or increased discharges after March 1, 1989, results in an expected ambient level of an indicator parameter of either of the following: (1) greater than one-third multiplied by the assimilative capacity for any indicator other than dissolved oxygen, or (2) greater than the sum of the existing level multiplied by two-thirds and the water quality criterion multiplied by one-third for dissolved oxygen. (14)

In summary, a great variety of approaches is used by states to define “degradation or lower water quality.” Such “significance” tests range from simple to complex, involve qualitative or quantitative measures or both, and often vary depending upon the type of parameter or the accuracy of the analytical method used to measure the parameter.

Issue (4): Existing Use Protection (see Boxes 7 and 8 in Figure 2).

Protection of existing uses is another issue where state implementation procedures exhibit considerable variability. For purposes of this discussion, state approaches are organized into two categories:

- (1) approaches to protect existing uses in high quality waters; and
- (2) approaches to protect existing uses in non-high quality waters.

Existing use protection in high quality (or tier 2) waters is one of a number of requirements that must be addressed prior to allowing a proposed activity to lower water quality. One of the primary questions that must be addressed is whether or not to rely on designated uses to reflect existing uses. Under the federal water quality standards regulation, designated uses are required to reflect attainable water uses (i.e., including, at a minimum, existing uses). Therefore, one approach is to rely on the designated uses and associated criteria to reflect levels of water quality necessary to protect existing uses. This simply requires the regulatory authority to ensure, under tier 2, that proposed activities will not lower water quality to the point that criteria are exceeded. For example,

At a minimum for all state surface waters existing, classified uses and the level of water quality necessary to protect such uses shall be maintained and protected. The classified uses shall be deemed protected if the narrative and numerical standards are not exceeded (16)

and:

Even though existing use as defined in the Standards (definition #12) relies on finding that actual use has occurred, it is clear from Sections 3-02; 3-03, and 3-04 that water quality is to be maintained regardless of the fact of existing uses. Therefore in implementing the antidegradation provisions of the Standards a level of water quality to protect potential uses (those recognized by the classification) will be maintained as well as for existing uses. The reclassification process will be relied on to change the level of protection afforded state waters as may be needed in the public interest. (6)

Another approach is to identify and protect existing uses regardless of whether the existing use is reflected by the designated use. This approach allows protection of existing uses where existing water quality supports a higher use than is designated for the waterbody. Because formal reclassification of waters is often a time-consuming exercise, states using this approach require protection of existing uses in tier 2 waters without awaiting a formal reclassification action for the waterbody. Consider the following examples:

“Existing uses” is defined in Rule 17-3.021(14) to mean any actual beneficial use of the waterbody on or after November 28, 1975. Therefore if there is conclusive evidence that a bay had been used for shellfishing in the late 1970s, dischargers could presently be required to meet Class II requirements even if the waterbody has always been and presently is classified as Class III. (12)

and:

This antidegradation provision requires that when the actual water quality of any waterbody exceeds the minimum requirements of the next higher Class, that the higher water quality will be maintained and protected. If the Department's water quality investigation and assessment report finds that the actual water quality of a waterbody is meeting all the minimum requirements of the next classification, and the Board concurs with the Department's report, then the Board and the Department shall treat that waterbody as if the next highest classification is assigned to that waterbody and the Board shall recommend to the next regular session of the Legislature that the water be reclassified in the next highest classification. (emphasis added 3)

Another issue related to existing use protection is determining appropriate measures of attainment. A key element of such determinations is whether water column concentrations are the sole measure by which existing use protection is to be gauged. As discussed above, one approach is to rely on the designated uses and their associated criteria (which generally focus on water column concentrations) to protect existing uses. Another approach is to broaden existing use protection to measure and address impairments resulting from non-water column factors. Consider the following examples:

Existing use protection is intended to allow the consideration of certain circumstances not addressed by the narrative and numerical standards. For example, there are reasons other than lowering of water quality that may be the cause of a discharger's adverse impact. Such reasons could include physical impacts, such as scouring of seagrass, that may adversely affect fish and wildlife habitat in certain situations. Also, there may be situations where lowering of water quality, even though kept within standards, will adversely affect fish and wildlife habitat or recreation. If the applicant has shown that the water quality standards would be met, DER must be able to document a reasonable scientific basis for its prediction that the proposed activity would impair one or more of the waterbody uses before requiring the applicant to further address this issue. (12)

and:

The policy defines significant impact to existing uses as impairing the viability of the existing population including significant impairment to growth and reproduction or an alteration of the habitat which impairs viability of the existing population (3)

Existing use protection in *non-high quality* (tier 1 only) waters is of critical importance because it is the only antidegradation requirement restricting further impairment of such waters (i.e., the alternatives analysis, socio-economic importance, and other tier 2 requirements are not applicable). Although water quality may be significantly impaired in such waters, necessitating different methods to derive control requirements (e.g., Total Maximum Daily Loads and water quality-based permit limits), the antidegradation procedure for protection of existing uses may be identical as that used for tier 2 waters. For example, the primary task is still to determine whether uses have existed, at some point after 1975, that have more stringent water quality requirements than the currently designated uses. Addressing this question is fully consistent with the federal water quality standards regulation which, at § 131.3(e), defines existing uses as follows:

Existing uses are those uses actually attained in the waterbody on or after November 28, 1975, whether or not they are included in the water quality standards.

Deriving effluent limits sufficient to protect existing uses may be different in non-high quality waters in that the criteria for the parameter of concern may already be exceeded (i.e., there is no assimilative capacity). This is especially likely where the state procedures follow a parameter-by-parameter approach to identifying high quality tier 2 waters (see Issue (2) discussed above). Where no assimilative capacity exists, protection of existing uses depends upon implementation of controls to ensure that water quality will protect existing uses fully. Pursuant to CWA § 303(d), states are required to develop such controls based on a Total Maximum Daily Load (TMDL) Analysis.

In summary, approaches to protect existing uses vary among the states. The two key issues which have attracted a variety of approaches are (1) whether to rely on the designated uses of a segment to also reflect existing uses and (2) whether (and how) to address impacts to existing uses resulting from non-water column influences.

APPENDIX 3: EPA REGION VIII RESPONSES TO
MAJOR COMMENTS

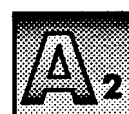
The following questions and comments were received by the Region in response to several earlier drafts of this guidance.

Why is EPA Region VIII establishing a minimum requirement that antidegradation reviews be conducted for “regulated activities”? Won’t this leave out many nonpoint sources?



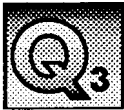
This was the single most difficult issue which arose in developing this guidance document. On the one hand, EPA Region VIII believes that water quality standards can and should be applied by states to all activities that affect water quality. On the other hand, many states have not yet adopted control regulations applicable to nonpoint sources, preferring to address nonpoint sources through voluntary programs. Since most state water quality standards are not self-implementing, states are typically left without a regulatory ability to control nonpoint sources. EPA Region VIII does not believe that a state antidegradation policy, in and of itself, necessarily creates a regulatory requirement to control nonpoint sources. EPA Region VIII also does not believe that the Clean Water Act, as interpreted by EPA regulations at 40 CFR 131, creates a federal requirement for states to regulate nonpoint sources such that water quality standards and anti-degradation requirements are satisfied. The Region does believe that, even in states where many activities that result in nonpoint sources are not regulated, there is a role for water quality standards and antidegradation in promoting voluntary water quality management efforts. EPA Region VIII also encourages states to apply anti-degradation broadly (in a regulatory sense) to all activities that may degrade water quality (see additional discussion of this issue in Chapter 4 of this guidance).

How *should* antidegradation tier 2 be applied to nonpoint sources?

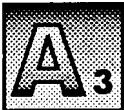


The process would be very similar for proposed point and nonpoint sources. Following the antidegradation implementation flow chart (see page 8), the first step is to determine whether the segment is a high quality water. This step would be the same for point and nonpoint sources. The next step, to determine whether the proposed activity would result in “significant degradation,” is somewhat more difficult for nonpoint sources because of the difficulty of predicting effects (such as pollutant loadings) of future nonpoint sources. EPA suggests that states rely on their experience and information on effectiveness of various BMPs in determining significance. As for

point sources, EPA Region VIII believes it makes sense to establish a low threshold of significance and to place the burden on the project applicant to prove that the proposed activity will not degrade water quality. In terms of identifying the least degrading alternative (i.e., is the degradation “necessary”), states may rely on their CWA § 319 nonpoint source management plans to identify the best management practices that are appropriate for the particular nonpoint source. However, follow-up monitoring of the effectiveness of in-place BMPs is critically important to improve the ability of the state to select the least-degrading alternative and minimize impacts of nonpoint sources pursuant to tier 2 requirements. As for point sources, Region VIII believes that the evaluation of alternatives is the appropriate focal point of tier 2 implementation efforts for nonpoint sources. The remaining components of a tier 2 review for proposed nonpoint sources would be very similar to such reviews for point sources. Additional discussion of how water quality standards apply to nonpoint sources can be found in EPA’s *Water Quality Standards Handbook*.



Does antidegradation only apply to specific parameters limited in the water quality standards or can it apply to any parameter of concern (e.g., phosphates)?



Antidegradation can and should apply to any parameter of concern, regardless of whether a numeric standard has been adopted. For a parameter such as phosphates, for which the narrative standards are likely to be the basis for control actions, antidegradation should still be applied. For example, under Part VI(B)(2)(c) of the model procedure, the proposed new or expanded effluent *loadings* of phosphates can be the basis for concluding that significant degradation will occur. As for determining necessity, many states have concluded that a ban on the discharge of phosphates is appropriate; and thus, under antidegradation tier 2, considering source reduction and pollution prevention alternatives would be appropriate.



How does EPA Region VIII plan to implement this guidance for activities on Indian lands?



EPA Region VIII stands ready to assist Indian tribes with establishing appropriate water quality standards and antidegradation programs on reservations. Consistent with the Agency’s 1984 Indian Policy, the Region will work directly with tribal governments and will encourage and assist tribes to assume water quality standards program management responsibilities for reservation lands. EPA Region VIII’s perspective on establishing water quality standards on reservations is discussed in more detail in *EPA Region VIII Interim Guidance: Water*

Quality Standards for Indian Tribes, January 1993, copies of which are available from the Region.

In the model implementation procedure, there is too much left to best professional judgment - the procedure will not insure consistent decisions in future reviews.

The Region acknowledges that the model procedure relies heavily on best professional judgment to make the various decisions associated with implementing antidegradation requirements. Although the procedure includes guidelines and discussion to lead the reviewer through the process, the Region intentionally left many of the decisions to best professional judgment so that unique circumstances specific to each case can be considered. To further explain how the procedure should be applied, the Region has developed and incorporated into the model procedure questions and answers to address specific scenarios. The Region recommends that states use this "case example" technique to communicate to dischargers and the public how the various antidegradation findings will be made.

The timing of the evaluation of alternatives required under tier 2 will occur after many projects have already undergone extensive evaluation. By the time a review is performed, the project may be too far advanced to make any less-damaging alternative reasonable.

The Region agrees that the timing of antidegradation reviews may be a problem. However, the problem can be avoided or, at least minimized by making sure that potentially affected parties are aware of antidegradation requirements. Distributing a detailed implementation procedure can help inform such parties about the overall purpose and philosophy of antidegradation as well as the specific steps and requirements that will be applied in reviewing proposed activities. Public outreach is thus an important aspect of antidegradation implementation.

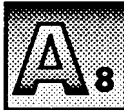
The guidance should address the special problems of ground water and the effects discharges to ground waters may have on surface waters.

Although states have flexibility to apply regulatory requirements to activities affecting ground water quality, such regulatory requirements are not mandated by the federal Clean Water Act. However, activities that may potentially affect surface water quality via a connection through groundwater may be subject to antidegradation requirements and regulation under the Clean Water Act. EPA





encourages states to apply their antidegradation requirements broadly to all activities that affect either surface or ground water quality.



The guidance should further discuss the purpose of antidegradation. The guidance sends mixed messages; on the one hand saying that degradation is not allowed and on the other setting up conditions under which it can be allowed. We object to use of “assimilative capacity” as it presupposes an intent to allow water quality to deteriorate up to the point where standards are about to be violated.

The Region believes that the commenter may have misunderstood the intended purpose of federal tier 2 requirements. It is true that the stated purpose of tier 2 in the federal water quality standards regulation is to “maintain and protect” existing high quality waters. However, tier 2 was never intended to be an absolute barrier to degradation except where, for example, a proposed activity has no social/economic importance or where the proposed degradation is not “necessary” because of the availability of reasonable less-degrading or non-degrading alternatives. The basic function of tier 2 is to ensure that where degradation occurs, it occurs for a good reason and is minimized in a reasonable manner, subject to public review. Thus, tier 2 is not intended to be an absolute barrier to degradation but rather a process to carefully consider whether allowing the degradation makes sense. The Region agrees that application of tier 2 will not necessarily preserve high quality waters at their existing quality indefinitely. For waters where long-term preservation of existing water quality is determined to be important, EPA suggests that states apply either an antidegradation tier 3 or tier 2.5 designation. Another option to preserve existing water quality in high quality waters is to apply the Total Maximum Daily Load (TMDL) program in a conservative manner. Because TMDLs are legally required to include a margin of safety (MOS), the TMDL is another option by which existing assimilative capacity can be preserved and protected.



For OSRW segments and discharges upstream of ONRW segments, what does EPA mean by “no effect”?



This comment addresses the fact that, on the one hand, discharges to OSRW segments and discharges upstream of ONRW segments are required to have *no effect* on water quality, and on the other hand factors (e.g., percent change in ambient concentrations, degree of confidence in the modeling technique utilized) are established to guide the decision. By establishing these factors, it was intended that the model procedure include a de minimis change threshold. EPA Region VIII believes that establishing such a threshold is appropriate and that extremely small projected changes in water quality

should not necessarily be grounds for prohibiting a proposed activity. The procedure includes the requirement for *no effect* to make clear that only truly miniscule projected changes in water quality should be excluded from consideration. The Region believes that as confidence in the projected water quality effects gets worse, the de minimis change threshold should get progressively lower (more restrictive). However, under no circumstances should an activity be allowed that is likely to result in a real change in water quality in an ONRW segment.

The proposed guidance advocates triggering of antidegradation when permitted effluent quality is increased, but what about municipalities with 20 year growth plans where the permit was written based on optimistic growth forecasts? Would antidegradation ever be triggered for such facilities?

The Region acknowledges that many POTWs were designed based on optimistic population growth forecasts and as a result have “permitted” loading rates that greatly exceed “existing” loading rates. To address these and other situations, the guidance has been revised to recommend consideration of existing versus permitted effluent quality when judging “significant degradation.” This factor will allow states to conclude significance even where there would be no increase in permitted loadings. The Region anticipates that some consideration of EEQ should be included in an antidegradation review, particularly where persistent toxics are of concern and where there may be pollution-prevention alternatives that could result in elimination of the parameters of concern from a facility’s effluent.

The bottom line requirements are not specific enough; where will EPA draw the line?

As explained in Chapter 3, the “bottom line” requirements are intended only to ensure that state and tribal antidegradation implementation procedures are sufficiently developed to promote effective implementation. To this end, Chapter 3 includes a list of the specific issues that must be addressed and clearly resolved by such state and tribal procedures. On all of the issues, there is a range of approaches that would be acceptable to EPA. On any given issue, it is difficult to say where EPA’s “line” is drawn; in general, EPA intends to provide states with the flexibility to implement innovative approaches. Where possible, EPA has included specific minimum requirements in Chapter 3 to identify potential disapproval items. However, on all of the issues, EPA reserves the right to review the specifics of a state or tribal implementation procedure prior to coming to a conclusion

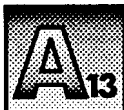




regarding approval. In the absence of specifics, EPA Region VIII cannot guarantee that any particular approach would be approved.

For direct discharges to ONRWs, why is EPA prohibiting a discharge that is equal to or better than background quality?

The basic requirement applicable to ONRWs is that they be maintained at their existing water quality. For a variety of reasons, EPA Region VIII does not believe that activities that will result in a new or expanded direct source of pollutants to an ONRW segment should be allowed. The Region acknowledges that in certain ONRWs, background water quality concentrations may be naturally “high” for some parameters. It is conceivable that a new direct source of one of these parameters would have a lower concentration than the existing background concentration and would thus lower the ambient concentration downstream of the new source. However, to the extent that maintaining “natural” conditions is a goal, any change, whether an increase or a decrease, may not be desirable. Also, it is impossible to guarantee the quality of new sources of pollutants. Effluent variability, operator errors, and treatment process upsets are facts of life. For these reasons, EPA Region VIII believes that maintaining the quality of ONRWs requires an absolute prohibition on new or expanded direct sources of pollutants, regardless of the quality of such sources.



The guidance should recommend that tier 2 not be applied to all waters not meeting uses according to CWA § 305(b), § 314 and § 319 assessments.

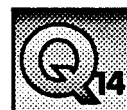
EPA Region VIII disagrees that assessments conducted under CWA § 305(b), § 314, or § 319 should be the basis for identifying high quality waters. The primary overall reason is that the threshold used to conclude “impairment” for purposes of these assessments may be substantially lower than is appropriate for identifying non-high quality or tier 1-only waters. As explained in Chapter 2, EPA Region VIII believes that tier 2 should be applied to a very large majority of state waters. In order to preserve high levels of water quality for parameters where existing quality is better than standards, the threshold of impairment for excluding waters from tier 2 (based on chemical-specific information) should be higher than for purposes of assessments such as those conducted under CWA § 305(b). Thus, Region VIII believes that tier 2 should be applied even where the criteria for some parameters are not always satisfied. Under assessments conducted under § 305(b), § 314, or § 319, a segment may appropriately be listed as “impaired” based on very limited data, and the impairment may be based on a single violation or the potential

effects of a single parameter. Also, to support the antidegradation analysis, the applicant may provide new data not available at the time of the § 305(b), § 314, or § 319 assessment that should be considered. Rather than focussing in on theoretical impairments resulting from single parameters, the Region believes that high quality waters should be identified based on an integrated assessment of the most recent chemical, physical, and biological data. For these reasons EPA Region VIII believes that information From these previously-completed assessments should be *considered* in implementing antidegradation. but they should not be the sole basis for concluding that a particular segment is not a high quality water.

The guidance should include a more detailed definition and procedure for determining ambient water quality to serve as the basis for identifying high quality waters and significant degradation.

The recommended approach is driven by the Region's belief that it is critical to focus available antidegradation review resources on the following question: *Are reasonable non-degrading or less degrading alternatives available?* The Region suggests that state and tribal tier 2 implementation efforts concentrate on responding to this question. The Region has intentionally not established a recommended minimum data base to define ambient conditions because of the possibility that acquiring such data might be viewed as a necessary prerequisite to making the high quality and significant degradation determinations, As explained in Chapter 4, EPA Region VIII recommends that states and tribes focus their efforts on the evaluation of alternatives and to pursue such evaluations for most proposed activities. This focus is most effectively achieved by addressing the high quality and significance questions as simply as possible and by establishing a rebuttable presumption that all waters are high quality and that all proposed activities will result in significant degradation. In many cases, making the high quality water and significance determinations should not prove to be difficult or data-intensive. In general, state TMDL procedures should be utilized to define existing ambient water quality conditions. Data that are necessary to make these determinations should be required of the project applicant. However, where data are sufficient to *suggest* that significant degradation of a high quality water will occur, an evaluation of alternatives should be required of the project applicant.

For purposes of determining significant degradation, why does EPA recommend use of the projected pollutant loadings instead of projected effluent/ambient concentrations? For example, if the quality of a proposed new discharge to a high quality water is equal to or



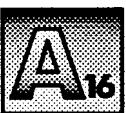


better than background water quality, when would an antidegradation review be necessary?

Information on both pollutant concentrations and loadings will be useful in judging significance. In some cases, a simple comparison of proposed versus existing effluent loadings will be sufficient basis to conclude that a significant change in water quality will result. In these cases, information on background water quality and modeling the potential change in water quality are not necessary to conclude significance. With regard to the cited example, where the quality of a proposed discharge is equal to or better than background water quality, the state would be correct in determining no significant degradation, except perhaps where a cumulative effect is of concern, such as may be the case with persistent toxics in fish or sediment.



Why does Region VIII recommend a waterbody-by-waterbody approach to defining high quality waters? Given the potential impacts of tier 2 requirements on dischargers, a parameter-by-parameter approach may be necessary to justify additional controls.



Both the waterbody-by-waterbody and the parameter-by-parameter approaches for identifying high quality waters are commonly used by states nationally, and either would be supported by EPA Region VIII. However, as explained in Chapter 4, Region VIII suggests that, generally, implementation of the federal requirement to apply tier 2 where “the quality of the waters exceed levels necessary to support...” (see 40 CFR 131.12(a)(2)) is best accomplished by focussing on segments where fishable/swimmable uses are attained. Note that waters which are not “swimmable” could still be high quality for purposes of “fishable” uses and vice versa. This approach allows high quality water determinations to be based on an integrated assessment of chemical, physical, and biological monitoring information, and it allows states to focus antidegradation review efforts on the higher-value state waters. The Region also believes that a high percentage of waters should qualify for tier 2 protection under this approach and that states should presume that its waters are high quality until proven otherwise. In addition, as discussed above, the Region does not believe that exceedences for one or two parameters should necessarily be a basis for concluding that a segment is not high quality (see comment #13). Thus, states should consider all available information and make an overall determination regarding whether a segment is high quality. However, the Region would like to emphasize that states may elect to apply a parameter-by-parameter approach as an effective means of identifying high quality waters and of protecting assimilative capacity wherever it occurs. Within the Region’s model procedure, a parameter-by-parameter approach

is applied for purposes of determining significant degradation. That is, prior to proceeding with the evaluation of alternatives, it is first determined that significant degradation is likely to result for one or more parameters. Hence, the Region recommends that implementation of tier 2 requirements should involve both an overall assessment of whether water quality “exceeds levels necessary” to support fishable/swimmable uses as well as a parameter-by-parameter assessment of whether water quality is likely to be significantly lowered by the proposed activity.